Notice of Allowability	Application No. 09/427,775	Applicant(s) KIDD ET AL.	
	Examiner Marianne L. Padgett	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *After final of 2/14/2007 & interviews/faxes of 3/(6&7)/2007*.

2. ☒ The allowed claim(s) is/are *1-5,7,10-17,24,25,27-39,41-50,52-62,67,68,70-82,85-88,90-103,105,111-114,117-129,132 and 151*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. ______ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: ______.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
   1) ☐ hereto or 2) ☐ to Paper No./Mail Date ______.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ______.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ______
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), ~~Paper No./Mail~~ Date *3/6/7, 3/7/7,3/8/7* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ______.

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with George Wang on 3/7/2007.

After entering the After Final amendment submitted 2/14/2007, amend the claims as in the attached **Appendix**, which has a complete listing of the claims.

2. The following is an examiner's statement of reasons for allowance: the amendments to the claims in the combination of the 2/14/2007 amendment, plus the amendments in the attached appendix provide limitations to independent claims 1 & 129, which are directed to analogous configuration and use limitations of evaporation sources + substrate + substrate support as present in previously allowed independent claim 151, that considered in combination with their plasma plating processes for a threaded surface, makes these claims allowable.

Further review & update of search and prior art, found no prior art that reads on these claims, however the following references are considered to be of interest to the state of the art: Ramm et al. (2007/0000772 A1), Massler et al. (7,160,616 B2) & Sato et al. (7,094,479 B2), none of which are prior art, and while teaching coating of substrates on turntables using evaporation sources, all the sources are opposed to outward facing substrate surfaces, thus none include the claimed relationship inclusive of coating the inward facing surface also; copending patents to Kidd et al. (6,858,119 B2, 6,503,379 B1, 6,905,582 B2 & 6,521,104 B1), are all to the same inventive entity, are not prior art, and are directed to apparatus claims only; and Yoshikawa et al. (5,103,766) & Wright et al. (4,090,941), who both rotate

substrate supports with symmetrically centered substrates being coated from vapor or sputtering sources symmetrically placed about the substrate(s), thus teaching a different configurations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. The examiner has also noted that the scanned file has a page submitted 1/7/2002 indicating that 3 replacement sheets of formal drawings for figures 1-6 were submitted to replace the 6 pages of originally submitted figures 1-6. However, these drawings were not found in the scanned file, and while the examiner has asked the contractors to look in the original paper file for the missing drawing sheets in order to scan them into the file, there is no guarantee that they will be found, hence applicants may consider submitting a new set, with a cover sheet indicating this problem, in order to insure use of the replacement formal drawings when the patent is printed.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

3/7/2007 & 3/8/2007

Marianne L. Padgett
MARIANNE PADGETT
PRIMARY EXAMINER

Appendix to Examiner's Amendment

U.S. App. No. 09/427,775
Atty. Docket No. 88742.472005
3/7/07

VWP

~~PROPOSED~~ AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for plasma plating comprising:

positioning a substrate with a threaded surface on a platform within a vacuum chamber, wherein an inwardly facing surface of the substrate faces a center of the platform and an outwardly facing surface of the substrate faces an edge of the platform and wherein the platform further comprises a turntable operable to rotate the substrate;

positioning a first depositant in ~~an~~ a first evaporation source within the vacuum chamber, the first depositant includes at least a first metal;

positioning a second depositant in a second evaporation source within the vacuum chamber, wherein the first evaporation source and second evaporation source are arranged so that rotation of the turntable moves the inwardly facing surface of the substrate past the first evaporation source at a first time and the outwardly facing surface of the substrate past the second evaporation source at a second time;

reducing an initial pressure in the vacuum chamber to at or below 4 milliTorr;

flowing a gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.1 milliTorr and 4 milliTorr;

applying a negative dc signal to the substrate at a voltage amplitude at or between one to 1,500;

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts; and

heating the first depositant and the second depositant to ~~a temperature~~ temperatures at or above the respective melting ~~point~~ points of the

~~depositant~~ depositants, whereby a plasma is generated in the vacuum chamber, the plasma includes a mixture of positively charged depositant ions and negatively charged electrons, and the depositant ions are plated on the threaded surface of the substrate to create a plated threaded surface, wherein the inwardly facing surface and the outwardly facing surface of the substrate ~~to create plated surfaces~~ encompasses the plated threaded surface, and wherein the plated threaded surface reduces galling between the plated threaded surface and a surface of a mated component.

2. (Previously Presented) The method of Claim 1, wherein the initial pressure is reduced in the vacuum chamber to at or below 1.5 milliTorr, and wherein gas is flowed through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.5 milliTorr and 1.5 milliTorr.

3. (Previously Presented) The method of Claim 1, wherein the negative dc signal is applied to the substrate at a voltage amplitude at or between negative 500 volts and negative 750 volts.

4. (Previously Presented) The method of Claim 1, wherein the power level is provided at or between 5 watts and 15 watts.

5. (Previously Presented) The method of Claim 1, wherein the power level is around 10 watts.

6. (Cancelled)

7. (Previously Presented) The method of Claim 1, wherein the initial pressure is reduced in the vacuum chamber to at or below 1.5 milliTorr, and the gas is flowed through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.5 milliTorr and 1.5 milliTorr, wherein a negative dc signal is applied to

the substrate at a voltage amplitude at or between negative 500 volts and negative 750 volts, and wherein the power level is provided at or between 5 and 15 watts.

8-9. (Cancelled)

10. (Currently Amended) The method of Claim ~~9~~ 1, further comprising: rotating the turntable at a revolutions per minute rate at or between 5 revolutions per minute and 30 revolutions per minute.

11. (Currently Amended) The method of Claim ~~9~~ 1, further comprising:

rotating the turntable at a rotational rate of revolutions per minute at or between 12 revolutions per minute and 15 revolutions per minute.

12. (Currently Amended) The method of Claim ~~9~~ 1, wherein the turntable includes an electrically conductive material that provides an electrically conductive path to the substrate, and applying the dc signal to the substrate and applying the radio frequency signal to the substrate include applying the dc signal and the radio frequency signal to the electrically conductive material of the turntable.

13. (Previously Presented) The method of Claim 12, wherein the dc signal and the radio frequency signal are applied to the electrically conductive material of the turntable using a commutator.

14. (Previously Presented) The method of Claim 12, wherein the dc signal and the radio frequency signal are applied to the electrically conductive material of the turntable using an electrically conductive brush.

15. (Currently Amended) The method of Claim ~~8~~ 1, wherein the platform is included as part of the vacuum chamber.

16. (Currently Amended) The method of Claim ~~8~~ 1, wherein the platform is a flat surface.

17. (Currently Amended) The method of Claim ~~8~~ 1, wherein the platform includes a horizontal surface.

18-23. (Cancelled)

24. (Currently Amended) The method of Claim ~~8~~ 1, wherein the platform includes an electrically conductive material.

25. (Currently Amended) The method of Claim ~~8~~ 1, wherein the platform is a conductive plate.

26. (Cancelled)

27. (Previously Presented) The method of Claim 1, further comprising:

mixing the dc signal and the radio frequency signal to generate a mixed signal, and wherein the dc signal and the radio frequency signal includes applying the mixed signal to the substrate.

28. (Original) The method of Claim 27, wherein the mixing the dc signal and the radio frequency signal includes mixing a negative dc signal and the radio frequency signal.

29. (Original) The method of Claim 27, further comprising:

balancing the mixed signal by minimizing the standing wave reflected power.

30. (Original) The method of Claim 29, wherein minimizing the standing wave reflected power is achieved using a manual control.

31. (Original) The method of Claim 29, wherein minimizing the standing wave reflected power is achieved using an automatic control.

32. (Currently Amended) The method of Claim 1, further comprising:

positioning ~~the~~ at least one of the first evaporation source and the second evaporation source relative to the substrate.

33. (Currently Amended) The method of Claim 32, wherein positioning the at least one of the first evaporation source and the second evaporation source includes positioning the at least one of the first evaporation source and the second evaporation source a distance from the substrate.

34. (Currently Amended) The method of Claim 33, wherein the distance is at or between 0.1 inches and 6 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as a base layer.

35. (Currently Amended) The method of Claim 34, wherein the distance is at or between 2.75 inches and 3.25 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as the base layer.

36. (Currently Amended) The method of Claim 33, wherein the distance is at or between 0.1 inches and 6 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as a transition layer.

37. (Currently Amended) The method of Claim 36, wherein the distance is at or between 2.75 inches and 3.25 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as the transition layer.

38. (Currently Amended) The method of Claim 33, wherein the distance is at or between 0.1 inches and 6 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as a working layer.

39. (Currently Amended) The method of Claim 38, wherein the distance is at or between 2.0 inches and 2.5 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as the working layer.

40. (Cancelled)

41. (Currently Amended) The method of ~~40~~ 1, further comprising positioning the first evaporation source a distance from the second evaporation source.

42. (Currently Amended) The method of Claim 41, wherein the distance is at or between 0.1 inches and 6 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as a base layer.

43. (Currently Amended) The method of Claim 42, wherein the distance is at or between 3.0 inches and 4.0 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as the base layer.

44. (Currently Amended) The method of Claim 41, wherein the distance is at or between 0.1 inches and 6 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as a transition layer.

45. (Currently Amended) The method of Claim 44, wherein the distance is at or between 3.0 inches and 4.0 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as the transition layer.

46. (Currently Amended) The method of Claim 41, wherein the distance is at or between 0.1 inches and 6 inches when ~~the~~ at least one of the first depositant and the

second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as a working layer.

47. (Currently Amended) The method of Claim 46, wherein the distance is at or between 2.5 inches and 3.0 inches when ~~the~~ at least one of the first depositant and the second depositant in the respective at least one of the first evaporation source and the second evaporation source is to be deposited as the working layer.

48. (Currently Amended) The method of Claim 1, further comprising:

an array of substrates, and the substrate is provided as one of the array of substrates;

positioning the first evaporation source relative to ~~outwardly~~ inwardly facing surfaces of the array of substrates;

~~positioning a second depositant in a second evaporation source within the vacuum chamber;~~ and

positioning the second evaporation source relative to ~~inwardly~~ outwardly facing surfaces of the array of substrates.

49. (Previously Presented) The method of 48, wherein the total mass of the second depositant is 20 to 80 percent less than the total mass of the depositant.

50. (Previously Presented) The method of 49, wherein the total mass of the second depositant is 40 to 50 percent less than the total mass of the depositant.

51. (Cancelled)

52. (Currently Amended) The method of Claim 1, further comprising:

positioning ~~a~~ the second depositant in ~~a~~ the second evaporation source within the vacuum chamber before reducing the initial pressure in the vacuum chamber to at or below 4 milliTorr; and

heating the second depositant to at or above the melting point of the second depositant, whereby a second plasma is generated in the vacuum chamber, the second plasma includes a mixture of positively charged second depositant ions and ~~negativel~~ negatively charged electrons, and the second depositant ions are plated on the threaded surface of the substrate.

53. (Currently Amended) The method of Claim 52, wherein the first depositant forms a base layer on the substrate and the second depositant forms a working layer on the base layer.

54. (Previously Presented) The method of Claim 52, further comprising:

positioning a third depositant in a third evaporation source within the vacuum chamber before reducing the initial pressure in the vacuum chamber to at or below 4 milliTorr; and

heating the third depositant to a temperature at or above the melting point of the third depositant, whereby a third plasma is generated in the vacuum chamber, the third plasma includes a mixture of positively charged third depositant ions and negatively charged electrons, and the third depositant ions are plated on the substrate.

55. (Currently Amended) The method of Claim 54, wherein the first depositant forms a base layer on the substrate, the second depositant forms a transition layer on the base layer, and the third depositant forms a working layer on the transition layer.

56. (Previously Presented) The method of Claim 1, wherein the radio frequency signal is provided at a frequency above one kilohertz range.

57. (Previously Presented) The method of Claim 1, wherein the radio frequency signal is provided at a frequency above one megahertz range.

58. (Original) The method of Claim 1, wherein the radio frequency signal is provided at a frequency of 13.56 kilohertz.

59. (Original) The method of Claim 1, wherein the radio frequency signal is provided at a frequency reserved for industrial applications.

60. (Original) The method of Claim 1, further comprising:

cleaning the substrate to remove foreign materials and oils.

61. (Original) The method of Claim 1, further comprising:

cleaning the substrate to achieve white metal clean.

62. (Original) The method of Claim 1, further comprising:

cleaning the substrate before positioning the substrate within the vacuum chamber.

63-66. (Cancelled)

67. (Original) The method of Claim 62, wherein the cleaning the substrate includes abrasively blasting the substrate.

68. (Original) The method of Claim 1, wherein the gas is introduced through a control valve.

69. (Cancelled)

70. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is a metal alloy.

71. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is gold.

72. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is titanium.

73. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is chromium.

74. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is nickel.

75. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is silver.

76. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is tin.

77. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is indium.

78. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is lead.

79. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is copper.

80. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is palladium.

81. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is a silver/palladium metal alloy.

82. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is carbon.

83-84. (Cancelled)

85. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is a metal carbide.

86. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is a metal nitride.

87. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first depositant and the second depositant is provided in a form from the class consisting of a pellet, a wire, a granule, a powder, a ribbon, and a strip.

88. (Original) The method of Claim 1, wherein the gas is an inert gas.

89. (Cancelled)

90. (Original) The method of Claim 1, wherein the gas is argon.

91. (Original) The method of Claim 1, wherein the gas is xenon.

92. (Original) The method of Claim 1, wherein the gas is radon.

93. (Original) The method of Claim 1, wherein the gas is helium.

94. (Original) The method of Claim 1, wherein the gas is neon.

95. (Original) The method of Claim 1, wherein the gas is krypton.

96. (Original) The method of Claim 1, wherein the gas is oxygen.

97. (Original) The method of Claim 1, wherein the gas is nitrogen.

98. (Original) The method of Claim 1, wherein the gas is noncombustible.

99. (Original) The method of Claim 1, wherein the plasma includes gas ions and depositant ions.

100. (Original) The method of Claim 99, wherein the gas ions and the depositant ions of the plasma include positively charged ions.

101. (Original) The method of Claim 99, wherein the gas ions and the depositant ions of the plasma include negatively charged ions.

102. (Currently Amended) The method of Claim 1, wherein the gas is argon and ~~the~~ at least one of the first depositant and the second depositant is a metal alloy of silver/palladium, and the plasma includes argon ions and silver/palladium ions.

103. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first evaporation source and the second evaporation source is a tungsten basket.

104. (Cancelled)

105. (Currently Amended) The method of Claim 1, wherein ~~the~~ at least one of the first evaporation source and the second evaporation source is a coil.

106-110. (Cancelled)

111. (Currently Amended) The method of Claim 1, wherein heating the first depositant and the second depositant includes supplying a current through the first evaporation source and the second evaporation source.

112. (Currently Amended) The method of Claim 111, wherein heating the first depositant and the second depositant includes incremental staging of the current to the first evaporation source and the second evaporation source to achieve an even heat distribution in the the first depositant and the second depositant.

113. (Original) The method of Claim 111, wherein the current is an alternating current.

114. (Currently Amended) The method of Claim 113, wherein the amplitude of the alternating current is controllably increased such that the at least one of the first depositant and the second depositant is uniformly heated and melted.

115.-116. (Cancelled)

117. (Original) The method of Claim 1, wherein the method does not include the addition of a magnet to produce a magnetic field near the substrate that affects the attraction of the ions of the plasma to the substrate.

118. (Previously Presented) The method of Claim 1, wherein the plasma forms a layer on the substrate to create the plated threaded surface at a thickness at or between 500 and 20,000 Angstroms.

119. (Previously Presented) The method of Claim 1, wherein the plasma forms a layer on the substrate to create the plated threaded surface at a thickness at or between 3,000 and 10,000 Angstroms.

120. (Previously Presented) The method of Claim 1, wherein the plasma forms a layer on the substrate to create the plated threaded surface that can be controlled to a thickness of 500 Angstroms.

121. (Currently Amended) The method of Claim 1, further comprising:

backsputtering the substrate before heating ~~the~~ at least one of the first depositant and the second depositant to a temperature at or above the melting point of the at least one of the first depositant and the second depositant.

122. (Currently Amended) The method of Claim 1, further comprising:

performing backsputtering before heating the first depositant and the second depositant that includes:

reducing the pressure in the vacuum chamber to at or below 100 milliTorr;

flowing a gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 20 milliTorr and 100 milliTorr;

applying a dc signal to the substrate at a voltage amplitude at or between 1 volt and 4000 volts; and

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts.

123. (Previously Presented) The method of Claim 122, wherein reducing the pressure in the vacuum chamber includes reducing the pressure in the vacuum chamber to at or below 50 milliTorr, and wherein flowing the gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 20 milliTorr and 100 milliTorr includes flowing the gas through the vacuum chamber at a rate to raise the pressure to at or between 20 milliTorr and 50 milliTorr.

124. (Original) The method of Claim 122, wherein applying the dc signal to the substrate at a voltage amplitude at or between 1 volt and 4000 volts includes applying a dc signal to the substrate at a voltage amplitude at or between 100 volts and 250 volts.

125. (Previously Presented) The method of Claim 122, wherein applying the radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts includes applying the radio frequency signal at a power level at or between 5 and 15 watts.

126. (Original) The method of Claim 122, wherein applying the dc signal to the substrate includes applying the dc voltage at a negative polarity.

127. (Original) The method of Claim 122, wherein backsputtering is performed for a period of time at or between 30 seconds and one minute.

128. (Original) The method of Claim 122, wherein backsputtering is performed until the rate of visible microarcing is significantly reduced.

129. (Currently Amended) A method for plasma plating comprising:

positioning a substrate with a threaded surface on a platform within a vacuum chamber, wherein an inwardly facing surface of the substrate faces a center of the platform and an outwardly facing surface of the substrate faces an edge of the platform and wherein the platform further comprises a turntable operable to rotate the substrate;

positioning a first depositant in the vacuum chamber;

positioning a second depositant in the vacuum chamber, wherein the first depositant and the second depositant are arranged so that rotation of the turntable moves the inwardly facing surface of the substrate past the first depositant at a first time and the outwardly facing surface of the substrate past the second depositant at a second time;

reducing an initial pressure in the vacuum chamber to at or between 0.5 milliTorr and 1.5 milliTorr;

applying a negative dc signal to the substrate at a voltage amplitude at or between 500 volts and 750 volts;

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts; and

heating the first depositant and the second depositant to ~~a temperature~~ temperatures at or above the respective melting ~~point~~ points of the ~~depositant~~ depositants, whereby a plasma is generated in the vacuum chamber, the plasma includes a mixture of positively charged depositant ions and negatively charged electrons, and the depositant ions are plated on the threaded surface of the

substrate to create a plated threaded surface, wherein the inwardly facing surface and the outwardly facing surface of the substrate~~ to create plated surfaces~~ encompasses the plated htreaded surface, and wherein the plated threaded surface reduces galling between the plated threaded surface and a surface of a mated component.

130-131. (Cancelled)

132. (Previously Presented) The method of Claim 129, wherein the power level is provided.

133-150 (Cancelled)

151. (Previously Presented) A method for plasma plating comprising:

positioning a substrate with a threaded surface on a platform within a vacuum chamber, wherein an inwardly facing surface of the substrate faces a center of the platform and an outwardly facing surface of the substrate faces an edge of the platform and wherein the platform further comprises a turntable operable to rotate the substrate;

positioning a first depositant in a first set of filaments within the vacuum chamber, the depositant includes at least a first metal;

positioning a second depositant in a second set of filaments within the vacuum chamber, wherein the first set and second set of filaments are arranged so that rotation of the turntable moves the inwardly facing surface of the substrate past the first set of filaments at a first time and the outwardly facing surface of the substrate past the second set of filaments at a second time;

reducing an initial pressure in the vacuum chamber to at or below 4 milliTorr;

flowing a gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.1 milliTorr and 4 milliTorr;

applying a negative dc signal to the substrate at a voltage amplitude at or between one to 1,500 volts;

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts; and

heating the first depositant and the second depositant to temperatures at or above their respective melting points, whereby a plasma is generated in the vacuum chamber, the plasma includes a mixture of positively charged first and second depositant ions and negatively charged electrons, and the first and second depositant ions are plated on the threaded surface, the inwardly facing surface and the outwardly facing surface of the substrate to create plated surfaces, and wherein the plated surfaces reduce galling between the plated surfaces and mating surfaces of a mated component.